INTRODUCTION

- Ceftaroline (Pfizer) and ceftobiprole (Correvio) are cephalosporins active against Gram-positive bacteria, including MRSA. Indications and clinical breakpoints differ (Table 1).
- There are few direct comparisons of their activity published.
- We reviewed comparative data for both agents vs.
  - staphylococci and pneumococci causing clinically-significant bacteraemia
  - pneumococci causing community-acquired pneumonia (CAP)

METHODS

- The BSAC Resistance Surveillance Programme has collected S. aureus, CoNS (coagulase-negative staphylococci) and S. pneumoniae causing clinically-significant bacteraemia between 2001 and 2017, and respiratory S. pneumoniae since 1999, from 22-39 hospitals throughout the UK and Ireland.
- Ceftaroline and ceftobiprole were tested in parallel by agar diffusion in 2008, 2013 and 2017 for bloodstream isolates (all species) and in 2016/17 for respiratory S. pneumoniae only.
- Ceftaroline and ceftobiprole were tested in parallel by agar diffusion in 2008, 2013 and 2017 for bloodstream isolates (all species) and in 2016/17 for respiratory S. pneumoniae only.
- CoNS were identified to species level in 2013 and 2017 by species) and in 2016/17 for respiratory bacteraemia.
- Modal and geometric mean MICs did not change significantly between years, except for CoNS tested with ceftobiprole where MICs rose for MR-CoNS and fell for MS-CoNS (Table 2).
- The geometric mean MICs of ceftobiprole varied by MR-CoNS species:
  - MR- S. epidermidis (215/291: 0.77)
  - MR- S. haemolyticus (33/36: 1.31)
  - MR-CoNS (other species) (53/105: 0.98)

RESULTS

- 3029 isolates were tested with both agents in the 3 non-consecutive years (Table 2).
- Modal and geometric mean MICs did not change significantly between years, except for CoNS tested with ceftobiprole where MICs rose for MR-CoNS and fell for MS-CoNS (Table 2).
- The geometric mean MICs of ceftobiprole varied by MR-CoNS species:
  - MR- S. epidermidis (215/291: 0.77)
  - MR- S. haemolyticus (33/36: 1.31)
  - MR-CoNS (other species) (53/105: 0.98)
- Rates of non-susceptibility to ceftaroline and ceftobiprole were low (Figure 1):
  - 10 (5%) MRSA and 42 (10%) MR-CoNS were non-susceptible to ceftaroline.
  - All S. aureus were susceptible to ceftobiprole.
  - 26/40 MR-CoNS were identified with ceftobiprole MIC >2mg/L; 22 (85%) were MR- S. haemolyticus.
  - 1 S. pneumoniae (serotype 19F) was non-susceptible to both ceftaroline and ceftobiprole.
- 2 further S. pneumoniae (serotypes 19F and 19A) were non-susceptible to ceftobiprole.

CONCLUSIONS

- Ceftaroline and ceftobiprole have similarly good activity against both staphylococci and pneumococci.
- Modal ceftaroline MICs for staphylococci tended to be c. 2-fold lower than ceftobiprole, but ceftobiprole has a 2-fold higher breakpoint.
- There were no changes in susceptibility of ceftaroline and ceftobiprole among S. aureus and pneumococci across the 10 years (2008-17).
- Changes in ceftobiprole MICs in CoNS were not due to changes in species distribution.
- Ceftobiprole MICs for MR- S. haemolyticus were >2mg/L in 22/33 (67%) cases compared with 2/215 (0.9%) MR- S. epidermidis.
- Ceftaroline MICs were also raised for MR- S. haemolyticus at 2mg/L.
- Choices regarding which agent to prefer should be predicated on other differentiating factors, e.g. licensed indications, reported clinical experience, and breadth of Gram-negative coverage.
- Continued collection of surveillance data is crucial for our understanding of antibiotic resistance trends in the UK and Ireland.

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REFERENCES

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6) http://www.eucast.org/clinical_breakpoints.

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